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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/668,998	09/24/2003	Rachid Sbiaa	117235	1822
25944	7590	02/08/2006	EXAMINER	
OLIFF & BERRIDGE, PLC P.O. BOX 19928 ALEXANDRIA, VA 22320			DAVIS, DAVID DONALD	
			ART UNIT	PAPER NUMBER
			2652	

DATE MAILED: 02/08/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

10/668,998

Applicant(s)

SBIAA ET AL.

Examiner

David D. Davis

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 November 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) 8-10 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## DETAILED ACTION

### *Election/Restrictions*

1. Claims 8-10 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected group and species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 2, 2005.
2. Applicant's election of Group I and Species I, claims 1-7 in the reply filed on May 2, 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1-3 and 6-7 are rejected under 35 U.S.C. 102(e) as being anticipated by Carey et al (US 6,836,392). As per claims 1, 6 and 7, Carey et al shows in figures 1 and 2 a thin-film magnetic head an antiferromagnetic layer 124; a pinned layer 129 whose direction of magnetization is fixed by exchange-coupling with the antiferromagnetic layer 124 and a free layer 127 whose direction of magnetization varies according to external magnetic field. Carey et

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al also shows in figures 1 and 2 an intermediate layer 126 disposed between the pinned layer 129 and the free layer 127; and a pair of electrode layers 112 for supplying a sense current to the free layer 127 in a layer thickness direction of the free layer 127. Figure 1 of Carey et al shows one of the first electrode layer 112 being connected to the pinned layer 129, and the second electrode placed above the free layer 127 on a side opposite the pinned layer 129. *Note: the word above is define able to be defined as "higher than", according to The American Heritage® Dictionary of the English Language, Fourth Edition.*

As per claim 2, Carey et al shows in figure 1 and 2 pinned layer 129 including a first ferromagnetic layer 123 in contact with the antiferromagnetic layer 124, and a second ferromagnetic layer 125 whose direction of magnetization is opposite to that of the first ferromagnetic layer 123. A nonmagnetic spacer layer 126 is disposed between the first and second ferromagnetic layers 123 & 125. The one electrode layer 112, on one side, connected to the pinned layer 129 is in contact with a track-width side face of the second ferromagnetic layer 125 but not in contact with a track-width side face, on the other side, of the first ferromagnetic layer 123.

As per claim 3, Carey et al shows in figure 2 a face of the second ferromagnetic layer 125 opposing the first ferromagnetic layer 123 has *an area* smaller than that of a face of the first ferromagnetic layer 123 opposing the second ferromagnetic layer 125. As per claim 5, Carey et al shows in figure 2 the intermediate layer 126 being formed from an electrically conductive material.

***Claim Rejections - 35 USC § 103***

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Carey et al (US 6,836,392). Carey et al discloses the claimed invention. See the description, supra.

Carey et al is silent as to the pinned layer, the intermediate layer, and the free layer being disposed between a substrate 101 and the antiferromagnetic layer 124.

Official notice is taken of the fact that pinned layers, the intermediate layers, and the free layers are disposed between a substrate 101 and the antiferromagnetic layer 124.

It would have been obvious to a person having ordinary skill in the art at the time the invention was made to provide the pinned layer, the intermediate layer, and the free layer disposed between a substrate and the antiferromagnetic layer as taught in the art. The rationale is as follows: one of ordinary skill in the art at the time the invention was made would have been

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motivated to provide a pinned layer, an intermediate layer and a free layer between a substrate and antiferromagnetic layer, which is well within the purview of a skilled artisan and absent an unobvious result, so as to effectively obtained the largest signal from a magnetic disc.

### *Response to Arguments*

6. Applicant's arguments filed November 23, 2005 have been fully considered but they are not persuasive. On page 10, Applicant asserts that "Carey fails to disclose an electrode layer that is placed above the free layer 127". As stated above, the word above is define able to be defined as "higher than", according to The American Heritage® Dictionary of the English Language, Fourth Edition. Carey shows the electrode layer higher than the free layer.

### *Allowable Subject Matter*

7. The claims would be favorably considered if amended to recite

--a first electrode layer of the pair of electrode layers **contacting** said pinned layer and a second electrode layer of the pair of electrode layers being place above the free layer on a side opposite the pinned layer so as to **cover the free layer**--.

This language is agreement with the last sentence of on page 14 of the specification stating "The upper electrode layer 44 is formed so as to cover the cap layer 40, whereas the lower electrode layer 42 is directly connected to the pinned layer 36".

The reasons for stating, in part, that the claims would be favorably considered is because, as noted in the second full paragraph on page 10 of the remarks received November 28, 2005, of the following:

Carey thus suffers deficiencies in that the contact area between the upper leads 112 and the free layer 127 is relatively small, electric current density is higher and a larger amount

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of heat is generated. Damage will thus likely occur in Carey and the S/N ration is deteriorated because the heat makes noise. Applicants overcome these deficiencies by placing the second electrode layer above the free layer on a side opposite the pinned layer. . .

### ***Conclusion***

8. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

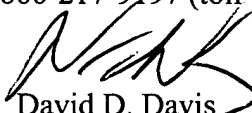
A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to David D. Davis whose telephone number is 571-272-7572. The examiner can normally be reached on Monday thru Friday between 7:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dwayne D. Bost can be reached on 571-272-7023. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).



David D. Davis  
Primary Examiner  
Art Unit 2652

ddd